

FACT SHEET

Proposed Modification of Underground Injection Control (UIC) Area Permit AK-1I001-A for the Construction and Operation of Class I Non-Hazardous Industrial Waste Injection Wells at the Badami Oil and Gas Unit on the North Slope of Alaska

U.S. Environmental Protection Agency, Region 10
Ground Water Protection Unit, OW-137
1200 Sixth Avenue
Seattle, Washington 98101
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Introduction

BP Exploration (Alaska), Inc., known as BPX, has requested a modification of the EPA issued Underground Injection Control (UIC) permit for the construction and operation of up to two Class I non-hazardous industrial waste injection wells at the Badami Unit. The Badami Unit is an oil field located on land and is about 27 miles east of the main Prudhoe Bay field complex.

The UIC injection permit, issued on August 22, 1997, is effective until August 22, 2007. The injection well has been receiving fluids since November 1997. The Badami injection well is drilled through the permafrost and penetrates geologic formations that contain naturally saline (brine) ground waters. Based on geophysical borehole log analyses performed by BPX, EPA has determined that the Badami Class I injection well has not penetrated any aquifers fresh enough (greater than 10,000 total dissolved solids) to qualify for protection as underground sources of drinking water.

The UIC permit authorizes BPX to inject non-hazardous waste fluids into the naturally saline Ugnu Formation at a depth of about 7040 feet or more below the land surface. During the initial phases of the field development, one constituent of the non-hazardous waste fluids was a "slurry" of pulverized rock and drilling muds that was a waste product of well drilling. As the field has matured, produced saltwater and domestic waste water constitutes the vast majority of injected waste fluid.

The EPA issued UIC permit requires BPX to perform annual tests to ensure the injection well maintains mechanical integrity. The purpose of the external mechanical integrity test is to determine whether fluid movement is occurring up and along side the outside of the cased and cemented well and, if so, the extent of such movement. BPX has requested modifications to the frequency, types and operational conditions under which external mechanical integrity test procedures are performed and the injected rate limitation in any 24 hour period. The current permit requires fluid movement tests be a combination of tests, including a radioactive tracer or borax tracer survey test performed in the slurry injection mode and the injection rate limitation for 24 hours is 3000 barrels.

BPX has informed EPA that there are operational difficulties in handling radioactive tracer material on the North Slope and has also informed EPA that there is increased risk of damaging the injection well when borehole logging tools are placed in the well while slurry fluids are being injected. Finally, BPX has indicated that

seasonal variations in waste volumes, including snow melt, lead to increased handling and safety concerns resulting unnecessary surface storage steps caused by the daily volume limit.

Summary of Proposed Action and Permit Conditions

The proposed modified permit requires fluid movement tests be a combination of tests pre-approved by EPA that may include tracer surveys, temperature tests, noise tests, water flow log tests, borax pulse neutron log tests, other log tests, as well as radioactive tracer tests. The modification requires at EPA's discretion, that fluid movement tests are required annually beginning after the first six months during drilling operations and every other year after drilling operations have concluded. The proposed modification allows for the option, but removes the requirement that the external mechanical integrity test must be based on the radioactive tracer test plus noise or temperature tests. Furthermore the proposed modification removes the requirement that tests be accomplished in the slurry injection mode and daily volumes be limited to 3000 barrels per day.

The proposed permit language modifications (**bold**) regarding specific well conditions and operations as it pertains to mechanical integrity are as follows:

Part II C.3b.(2) To detect movement of fluids in vertical channels adjacent to the well bore and to determine that the confining zone is not fractured, ~~a radioactive or borax tracer survey and a temperature or noise log~~ **approved fluid movement tests** shall be conducted at an injection pressure at least equal to the maximum continuous injection pressure observed in the previous six months. ~~While the grind and inject facility is in operation, the tracer tests shall be run in the slurry injection mode by adding the tracer to the operational injection stream in sufficient concentration to ensure detection behind the casing.~~ **Approvable fluid movement tests include, but are not limited to tracer surveys, temperature logs, noise logs, water flow logs (WFL), borax pulse neutron logs (PNL), or other logs. The specific suite of fluid movement tests proposed to satisfy this requirement are subject to prior approval by the Director.** Copies of all logs shall be accompanied by a descriptive and interpretive report. ~~Fluid movement tests are required annually beginning after the first six months of normal operation.~~ **Beginning after the first six months of normal operation, fluid movement tests are required annually during drilling operations and every other year after drilling operations have concluded.**

Part II C.7 The rate of waste injection shall be limited to a maximum of 65,000 barrels per month based on a 30 day month. The instantaneous injection rate shall not exceed 5 barrels per minute ~~nor shall the injected volume exceed 3000 barrels in any 24 hour period.~~

Public Comment

Comments were sought from the Alaska Department of Environmental Conservation (ADEC) and the Alaska Oil and Gas Conservation Commission (AOGCC) regarding the proposed modifications of the UIC permit and the associated fact sheet. The EPA is now requesting public review of the proposed permit modifications. Persons wishing to comment on the proposed permit modification may do so in writing by **March 16, 2001.** Comments should be accompanied with a basis for the comments and substantiating facts. Please also include the name, address, and telephone number of the person making comment. All written comments and requests should be submitted to EPA at the above address to the attention of Thor Cutler, Ground Water Protection Unit or via electronic mail to cutler.thor@epa.gov. After **March 16, 2001**, the EPA may choose to finalize the modification as drafted, if no substantive comments are received during the public comment period.

For further information, please contact Thor Cutler at (206) 553-1673.